

# Protecting Endangered Species

## Interim Measures for Use of Insecticides in San Diego County

The federal Endangered Species Act is intended to protect and promote the recovery of animals and plants that are in danger of becoming extinct due to human activities. Under the Act, the U.S. Environmental Protection Agency (U.S. EPA) must ensure that the use of pesticides it registers will not result in harm to the species listed as endangered or threatened by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service, or to habitat critical to those species' survival. This program will protect endangered and threatened species from harm due to pesticide use.

The information provided in this bulletin is similar to what U.S. EPA expects to distribute once the Endangered Species Protection Program is in effect. Individuals who use pesticides during this interim period are not legally required to comply with these suggested measures. At the present time, compliance with the requirements specified on the pesticide product labeling will satisfy the requirements of the state and federal pesticide regulatory agencies. While pesticide use conditions in this bulletin do not yet have the force of law, they are being provided now for your use in voluntarily protecting endangered and threatened species.

Your comments are needed regarding the information presented in this publication. Please contact us to let us know whether the information is clear and correct. Also tell us to what extent following the recommended measures would affect your pesticide use program. This information will be considered by U.S. EPA during the final stages of program development.

Please submit comments to:  
DPR Pesticide Registration Branch  
1020 N Street, Room 332  
Sacramento, CA 95814  
(916) 324-3881



### About This Publication

This publication contains a map and list of sections where certain federally listed (threatened or endangered) species occur. It also contains a table of insecticide active ingredients that could adversely affect these species. The insecticides are classified by the type of hazards that they pose to non-target species, and the species are classified by their susceptibility to each class of hazard.

Where one or more of the insecticides listed in this bulletin is intended for use in one or more of the sections listed in this bulletin and the hazard class of the insecticide matches the hazard susceptibility of one or more species occurring in the section to be treated, this bulletin specifies conditions of use that are designed to protect listed species.

### Does This Information Apply To You?

To determine whether this information applies to your use of a pesticide, review the questions below. The information applies only if you answer "yes" to all three of these questions:

- Do you intend to use pesticides within the shaded areas on the maps (pages 3-8) that are further detailed in the Section List (page 15)? If so, note the species from the Section List.
- Are any of the ingredients included in your pesticide product named in the Active Ingredients table (pages 9-10)?
- If so, does the hazard class(es) of the pesticide you intend to use match one or more of the hazard class(es) of the species as shown in the Use Limitation Codes table (pages 12)?

If you answer "yes" to all three questions, you should follow the instructions on "How to Use This Information" (page 2) to help protect listed species.

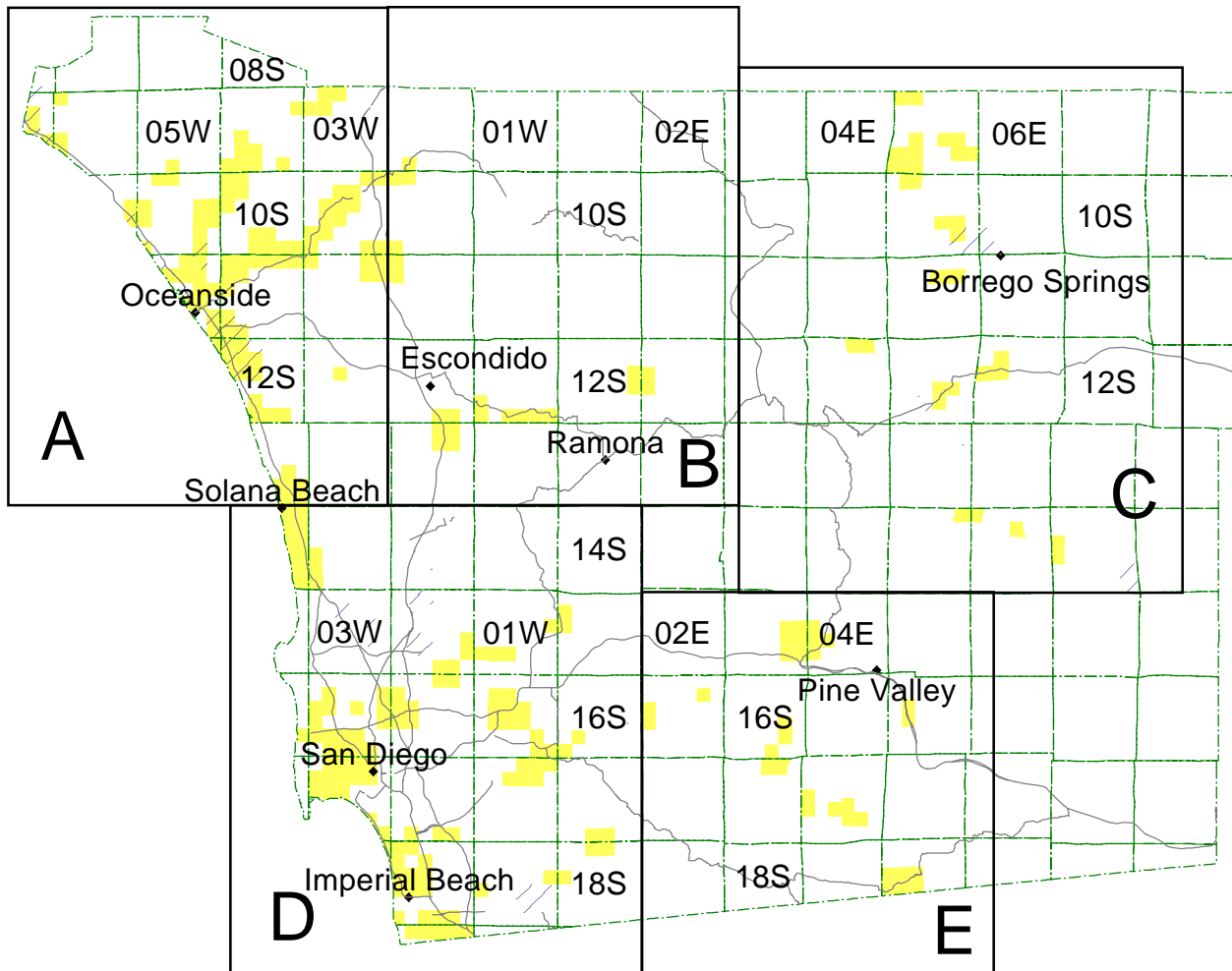
If you answer "no" to any of the above questions, this bulletin does not apply to you.

## How to Use This Information

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- 1 On the maps provided with this bulletin (pages 3-8), find the area where you will apply pesticides. If the site is clearly outside of the shaded area, refer to the label for general fish and wildlife protection, this bulletin does not apply to you. If the site clearly is in the shaded area or you are not sure from the map, please refer to the Section List (beginning on page 15) for more detailed information.
- 2 If the section where you will apply pesticides is not in the section list, then see the label for general fish and wildlife protection, this bulletin does not apply to you. If the section where you will apply pesticides is listed, note the species that is (are) likely to be found in the section.
- 3 In the Active Ingredients table (pages 9-10), look up the pesticide(s) you intend to use. If the pesticide(s) you intend to use **does not** appear in this table, this bulletin does not apply to you. If one or more pesticides you intend to use **does** appear in the table, note the hazard class for each pesticide.
- 4 In the Use Limitation Codes table (page 11), look up the species and compare the hazard class (from the Active Ingredients table (pages 9-10) for the pesticide(s) you intend to use. If the hazard class for the pesticide(s) **does not** match one or more of the hazard class(es) for the species, this bulletin **does not** apply to the intended use. If one or more of the hazard class(es) **does** match for any of the pesticides you intend to use, note the use limitation code(s).
- 5 In the Limitations on Pesticide Use table (page 12), look up the code number and follow the limitation(s) that apply to each section where you will apply a pesticide that is subject to this bulletin.
- 6 In the Habitat Descriptors table (page 13-14), you will find a description of typical habitat for each species listed in this bulletin. Use limitations apply only to sites which match the descriptions in this table (and adjacent areas where buffer zones apply). If you are unsure from these descriptions whether there is habitat in or near the locations where you intend to apply pesticides, contact your county agricultural commissioner for assistance.
- 7 If you are applying more than one pesticide that is subject to this bulletin or applying such a pesticide in an area with more than one listed species, multiple limitations may apply. If multiple use limitations conflict, follow the most restrictive limitation.

## Distribution of Species Addressed in This Bulletin



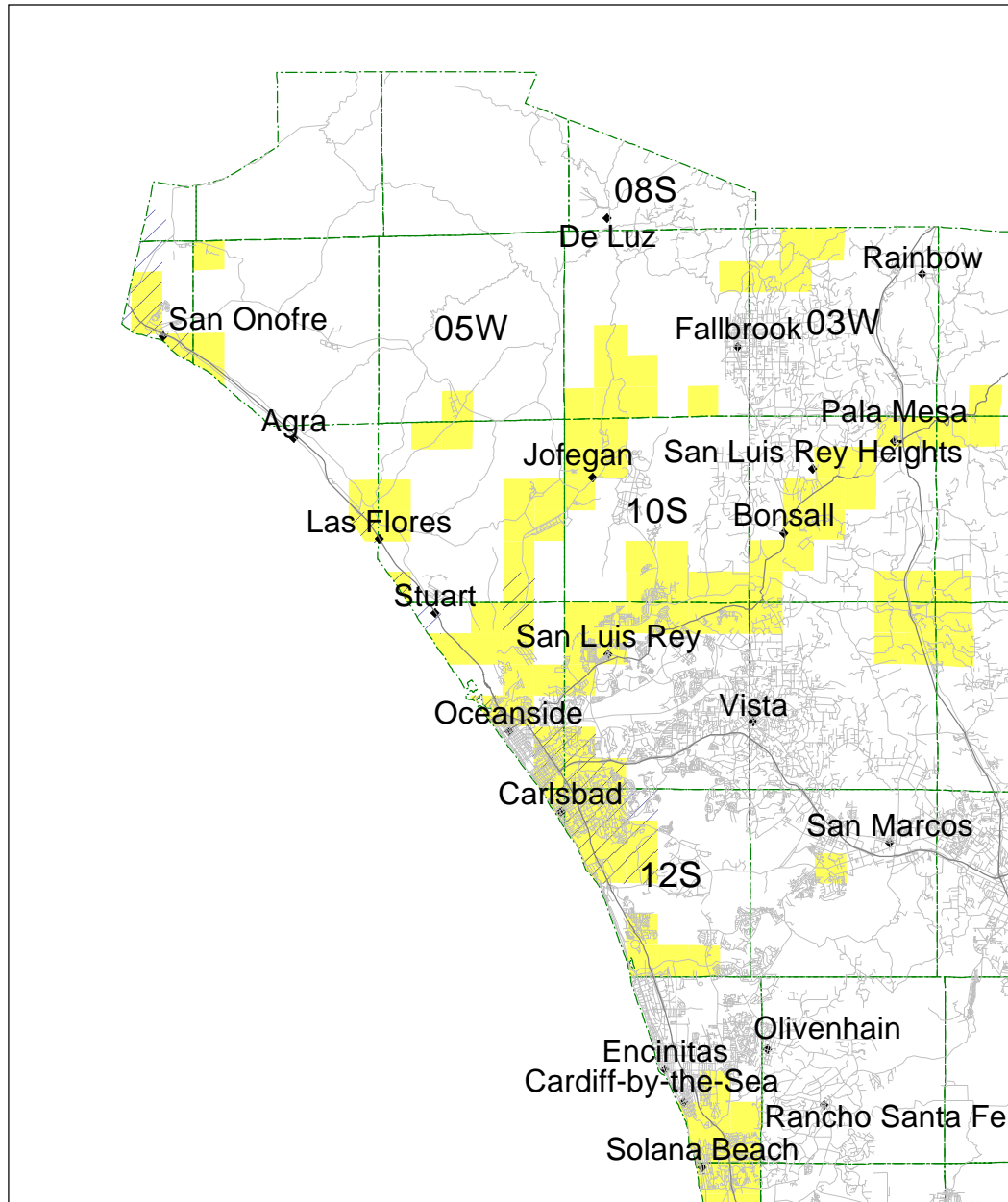
Terrestrial Species (birds and insects)



Aquatic Species (restrictions apply only to aquatic habitats and flowing waters within species distribution- refer to the habitat descriptors in the bulletin for further information)

## Overview Map

## Distribution of Species Addressed in This Bulletin



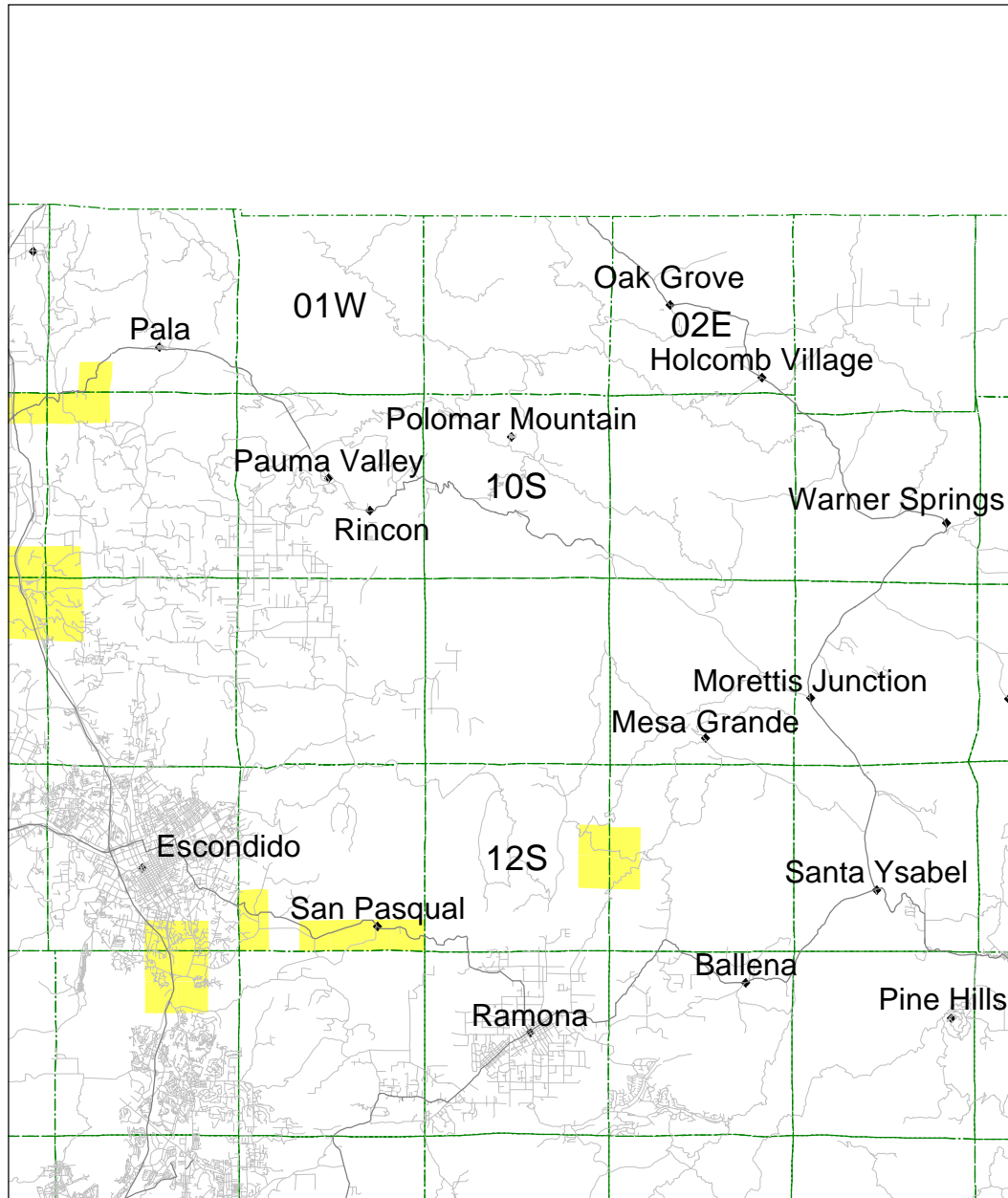
Terrestrial Species (birds and insects)



Aquatic Species (restrictions apply only to aquatic habitats and flowing waters within species distribution- refer to the habitat descriptors in the bulletin for further information)

Detail Map A

## Distribution of Species Addressed in This Bulletin



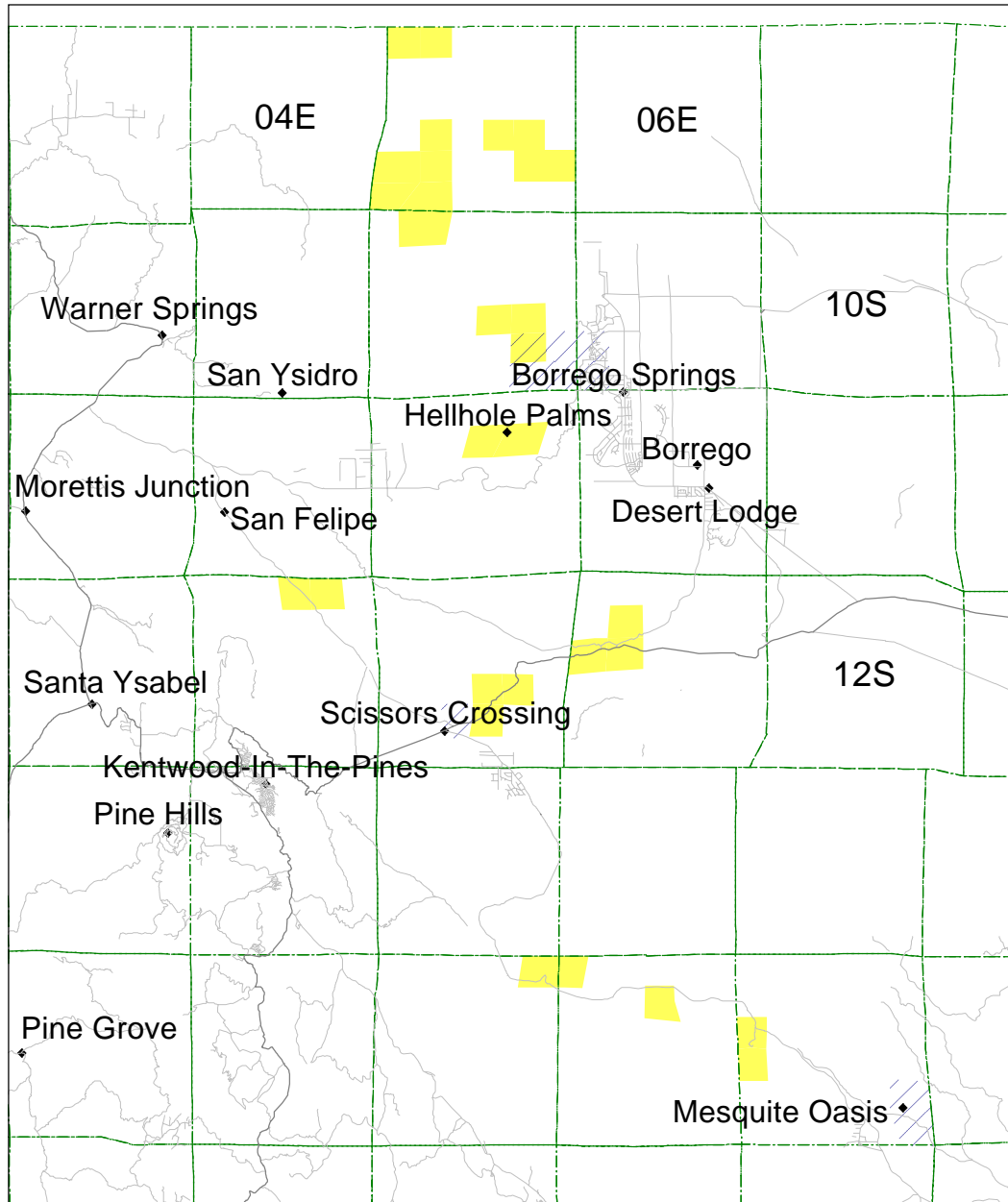
Terrestrial Species (birds and insects)



Aquatic Species (restrictions apply only to aquatic habitats and flowing waters within species distribution- refer to the habitat descriptors in the bulletin for further information)

### Detail Map B

## Distribution of Species Addressed in This Bulletin



Terrestrial Species (birds and insects)

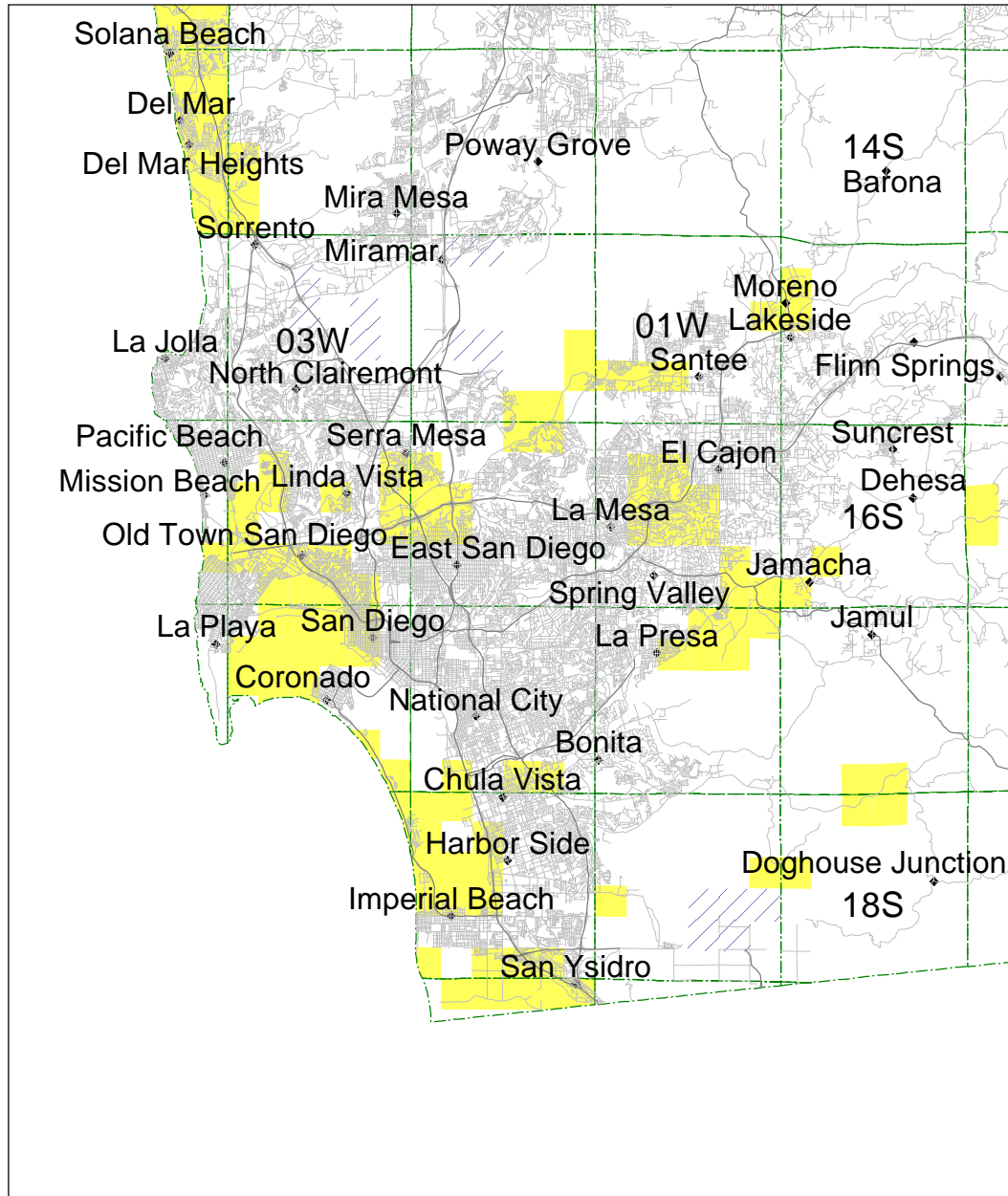


Aquatic Species (restrictions apply only to aquatic habitats and flowing waters within species distribution- refer to the habitat descriptors in the bulletin for further information)

## Detail Map C



## Distribution of Species Addressed in This Bulletin



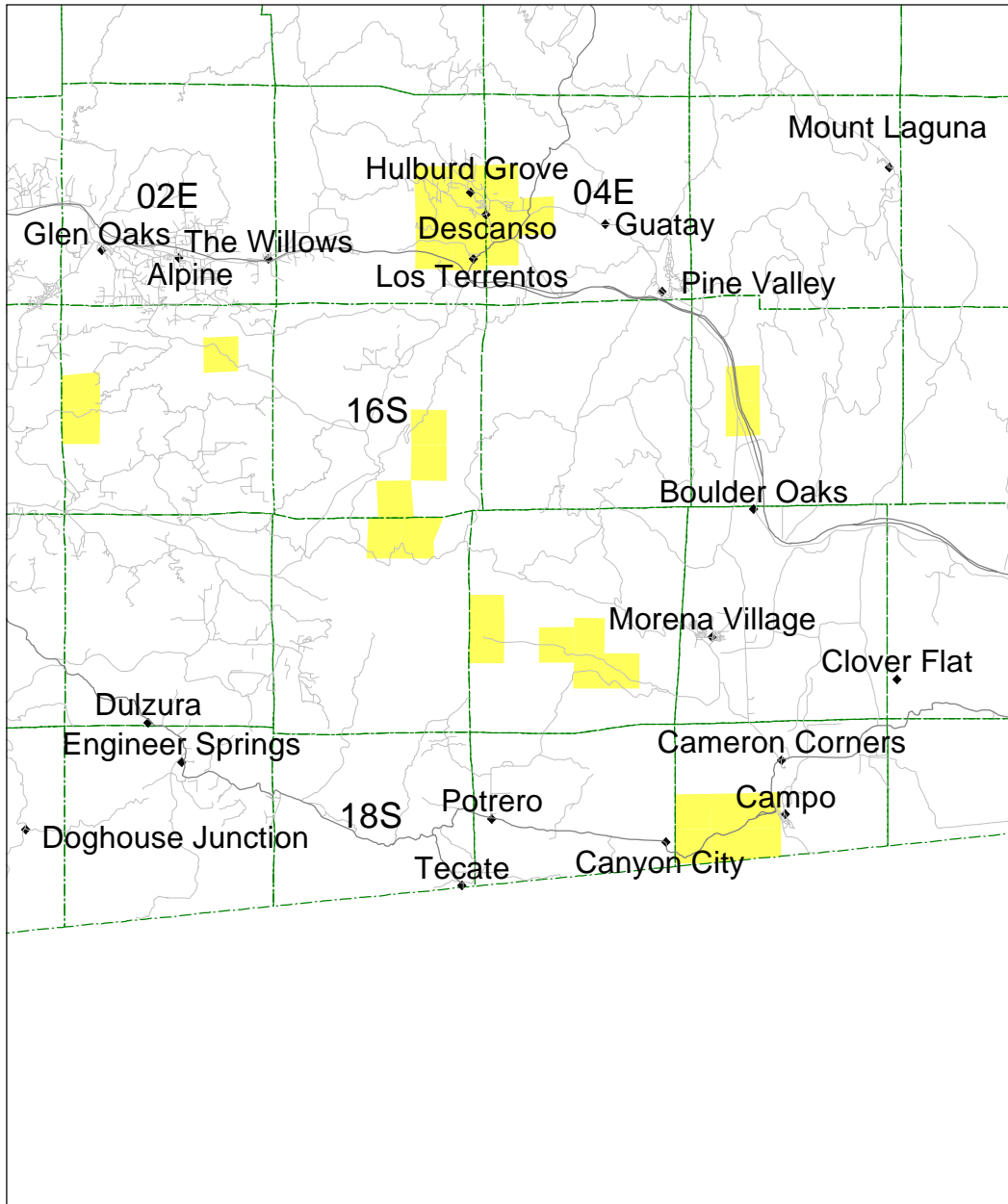
Terrestrial Species (birds and insects)



Aquatic Species (restrictions apply only to aquatic habitats and flowing waters within species distribution- refer to the habitat descriptors in the bulletin for further information)

## Detail Map D

## Distribution of Species Addressed in This Bulletin



Terrestrial Species (birds and insects)



Aquatic Species (restrictions apply only to aquatic habitats and flowing waters within species distribution- refer to the habitat descriptors in the bulletin for further information)

## Detail Map E



## Active Ingredients

Pesticides	Hazard Class		
	Aquatic (AQ)	Avian (AV)	Insects (IN)
acephate (1,3)			X
aldicarb (1,2)	X	X	
amitraz (3)	X		X
avermectin (3)	X		X
azinphos-methyl (1)	X	X	X
Bacillus thuringiensis*			X*
bendiocarb (1)	X	X	X
bifenthrin (2)	X		X
buprofezin (3)	X		X
carbaryl (2,3,4)	X		X
carbofuran (1,3)	X	X	X
carbophenothion (2)	X	X	X
chlorfenapyr (3)	X		X
chlorpyrifos (1,2,3)	X	X	X
cyfluthrin (3)	X		X
cypermethrin (3)	X		X
cyromazine (3)			X
diazinon (2)	X	X	X
dicofol (2)	X	X	X
dicrotophos (2)	X	X	X
diflubenzuron (3,4)	X	X	X
disulfoton (2)	X	X	X
endosulfan (1)	X	X	X
esfenvalerate (1,3)	X		X
ethion (2)	X		X
ethoprop (2)	X	X	X
fenitrothion (2)	X	X	X

1) U.S. EPA "may-affect" findings (1979-1991)

2) U.S. FWS Biological Opinion (9/19/89)

3) DPR Section 18 issues (1985-1997)

4) DFG Pesticide Investigations Unit

\* Different strains of *Bacillus thuringiensis* are selective for different insects. Most strains target Lepidopterous pests only. See your county agricultural commissioner for details.

## Active Ingredients (continued)

Pesticides	Hazard Class		
	Aquatic (AQ)	Avian (AV)	Insects (IN)
fenpropathrin (3)	X		X
fenthion (livestock use) (1)	X	X	
fenvalerate(1)	X		X
fluvalinate (3)	X		X
fonofos (2)	X	X	X
imidacloprid (3)			X
malathion (2,3)	X		X
methamidophos (1)		X	X
methidathion (2)	X	X	X
methiocarb (1)		X	
methomyl (2)	X	X	X
methyl parathion (1,2)	X	X	X
mevinphos (2,3)	X	X	X
naled (1,2,3)	X		X
oxamyl (2,4)	X	X	X
oxydemeton-methyl (2,4)	X	X	X
parathion (1)	X	X	X
permethrin (1)	X		X
phorate (1,4)	X	X	X
phosmet (2,3)	X		X
profenphos (2)	X		X
propargite (2)	X		X
pyrethrin (2,3)	X		X
pyriproxyfen (3)	X		X
tebufenozide (3,4)	X		X
terbufos (1,2)	X	X	X
thiodicarb (1)	X		X
tralomethrin (1)	X		X
trichlorfon (2)	X		X

1) U.S. EPA "may-affect" findings (2/26/91)

2) U.S. FWS Biological Opinion (9/19/89)

3) DPR Section 18 issues (1985-1997)

4) DFG Pesticide Investigations Unit

## Use Limitation Codes





Species	Hazard Class	<b>Limitation Codes</b>  Use limitations apply to the shaded area on the maps when any active ingredients are used that match the hazard class indicated. <i>See the Section List in this bulletin for more detail on species locations.</i>
Arroyo Southwestern Toad	AQ	10, 15, 16, 17
California Least Tern	AQ/AV	10, 15, 16, 17
Desert Pupfish	AQ	10, 15, 16, 17
Least Bell's Vireo	AV	10, 17
Riverside Fairy Shrimp	AQ	10, 15, 16, 17
San Diego Fairy Shrimp	AQ	10, 15, 16, 17
Tidewater Goby	AQ	10, 15, 16, 17
Unarmored Threespine Stickleback	AQ	10, 15, 16, 17
Western Snowy Plover	AQ/AV	10, 15, 16, 17

## Limitations on Pesticide Use

Code	Limitation
<b>10</b>	Do not use in currently occupied habitat (see Habitat Descriptors for possible exceptions).
<b>15</b>	Provide a 20 foot minimum strip of vegetation (on which pesticides should not be applied) along rivers, creeks, streams, wetlands, vernal pools and stock ponds or on the downhill side of fields where run-off could occur. Prepare land around fields to contain run-off by proper leveling, etc. Contain as much water "on-site" as possible. The planting of legumes, or other cover crops for several rows adjacent to off-target water sites is recommended. Mix pesticides in areas not prone to run-off such as concrete mixing/loading pads, disked soil in flat terrain or graveled mix pads, or use a suitable method to contain spills and/or rinsate. Properly empty and triple-rinse pesticide containers at time of use.
<b>16</b>	Conduct irrigations efficiently to prevent excessive loss of irrigation waters through run-off. Schedule irrigations and pesticide applications to maximize the interval of time between the pesticide application and the first subsequent irrigation. Allow at least 24 hours between application of pesticides listed in this bulletin and any irrigation that results in surface run-off into natural waters. Time applications to allow sprays to dry prior to rain or sprinkler irrigations. Do not make aerial applications while irrigation water is on the field unless surface run-off is contained for 72 hours following the application.
<b>17</b>	For sprayable or dust formulations: when the air is calm or moving away from habitat, commence applications on the side nearest the habitat and proceed away from the habitat. When air currents are moving toward habitat, do not make applications within 200 yards by air or 40 yards by ground upwind from occupied habitat. The county agricultural commissioner may reduce or waive buffer zones following a site inspection, if there is an adequate hedgerow, windbreak, riparian corridor or other physical barrier that substantially reduces the probability of drift.





# Habitat Descriptors

Use limitations in this bulletin apply only to sites that match or (where buffer zones apply) are adjacent to sites that match the habitat descriptions for each species as shown in this table. Except as noted, use limitations apply at any time of year.

	<p><b>Arroyo Southwestern Toad</b> (<i>Bufo microscaphus californicus</i>) - Endangered - occurs only in rivers that have shallow, gravelly pools adjacent to sandy terraces. Use limitations apply for the aquatic stage from late March to July. Foraging habitat for juveniles and adults consists of sandy stream terraces with nearly complete riparian cover and little or no surface vegetation. Adults may migrate up to 1.8 kilometers into upland areas for foraging.</p>
 <p>photo: B. Moose Peterson/WRP</p>	<p><b>California Least Tern</b> (<i>Sterna antillarum browni</i>) - Endangered - migratory seabird. Use limitations apply from April to September when the terns are present. It nests along expansive stretches of shoreline and feeds on small fish near inshore estuaries, river mouths and shallows.</p>
 <p>photo: B. Moose Peterson/WRP</p>	<p><b>Desert Pupfish</b> (<i>Cyprinodon macularius</i>) - Endangered - occurs in irrigation ditches, isolated hot desert springs, seeps, marshes and saline pools, most commonly in still, soft-bottomed pools &lt; 2 feet deep, found in the Salton Sea Basin.</p>
 <p>photo: Brent Helm, Jones &amp; Stokes Assoc.</p>	<p><b>Fairy Shrimps:</b> <b>Conservancy Fairy shrimp</b> (<i>Branchinecta conservatio</i>) - Endangered; <b>Longhorn Fairy Shrimp</b> (<i>B. longiantenna</i>) - Endangered; <b>Riverside Fairy shrimp</b> (<i>Streptocephalus woottoni</i>) - Endangered; <b>San Diego Fairy shrimp</b> (<i>B. sandiegonensis</i>) - Endangered; <b>Vernal Pool Fairy Shrimp</b> (<i>B. lynchi</i>) - Threatened - found in vernal pools. Buffer zones apply whenever pools have water (typically December until early May). Direct treatment of vernal pools in any season (i.e. with or without standing water present) is prohibited.</p>

## Habitat Descriptors (continued)

Use limitations in this bulletin apply only to sites that match or (where buffer zones apply) are adjacent to sites that match the habitat descriptions for each species as shown in this table. Except as noted, use limitations apply at any time of year.

 <p>photo: B. Moose Peterson/WRP</p>	<p><b>Least Bell's Vireo</b> (<i>Vireo bellii pusillus</i>) - Endangered - migratory bird that occurs in California from mid-March to August. The vireos typically inhabit a combination of riparian vegetation dominated by willows (<i>Salix spp.</i>) and mulefat (<i>Baccharis slicifolia</i>) including upland areas adjacent to riparian habitats. Nests have been observed in such plants as Mexican Elderberry (<i>Sambucus mexicana</i>) and coyote brush (<i>Baccharis pilularis</i>). Use limitations apply to natural vegetation areas in the season when vireos are present.</p>
 <p>photo: B. Moose Peterson/WRP</p>	<p><b>Tidewater Goby</b> (<i>Eucyclogobius newberryi</i>) - Endangered - found in the still waters of coastal lagoons, marshes and creeks, in water usually less than 3 feet deep. They tolerate a wide range of salinity from freshwater to nearly seawater, but they do not enter the ocean.</p>
 <p>photo: B. Moose Peterson/WRP</p>	<p><b>Unarmored Threespine Stickleback</b> (<i>Gasterosteus aculeatus williamsoni</i>) - Endangered - reside in small pools in clear trickling streams with streambed vegetation and barriers that create slow-flowing nesting pools.</p>
 <p>photo: B. Moose Peterson/WRP</p>	<p><b>Western Snowy Plover</b> (<i>Charadrius alexandrinus nivosus</i>) - Threatened - inhabits sandy, dune-backed beaches, sand spits, bayshore sandflats, drier portions of tidal estuaries, salt evaporating ponds, alkaline flats and the shores of alkaline bodies of water.</p>



## Best Management Practices

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The following best management practices are recommended to maximize the efficiency of pesticide applications and reduce the potential for exposure to non-target organisms.

Maintain spray equipment in good repair and train employees in proper operation. Correctly calibrate spray equipment to deliver proper water volumes and the largest droplet size consistent with thorough coverage of target vegetation. Turn off spray nozzles during turns at the ends of rows and shut off the manifold which faces away from the field when treating outside rows. Properly set spray nozzles on the manifold for the height of vegetation to be treated. Use or properly dispose of any pesticide remaining in application equipment following application according to label directions. Dispose of pesticide containers in an approved landfill in accordance with regulations of the agricultural commissioner.

Consider the suitability of alternative pesticides or formulations or other control measures before using pesticides subject to this bulletin. Time applications for efficiency and effectiveness by pest management models or other methods to minimize the number of applications required to obtain pest control.

Incorporate granular insecticides a minimum of two inches below the soil surface to avoid hazards to seed-eating birds.

## Section List

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The following is an index to Townships, Ranges and Sections where the species addressed in this bulletin are likely to be found. Additional information is provided in the Table of Habitat Descriptors to indicate where pesticide use limitations apply within the listed sections. Bulletins will be updated six months. Bulletins are available from the county agricultural commissioner or via the Internet:

(<http://www.cdpr.ca.gov/docs/es/qb/overview.htm>)

If a section is suspected to be no longer suitable for a listed species, or if additional sections should be included as suitable, please contact the county agricultural commissioner. This section list is maintained for pesticide regulatory purposes only.

## Section List

### San Diego County

#### Sections

08S05E: S32-33  
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10S05E: S26  
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10S05W: S35  
10S06E: S30-31  
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10S06W: S24  
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11S03W: S1-2, 6, 11-12  
11S04W: S1

#### Species

Least Bell's Vireo  
Arroyo Toad  
Riverside Fairy Shrimp  
Least Bell's Vireo  
Arroyo Toad  
Least Bell's Vireo  
Arroyo Toad  
Least Bell's Vireo  
Least Bell's Vireo  
Least Bell's Vireo  
Least Bell's Vireo  
Least Bell's Vireo  
California Least Tern  
Tidewater Goby  
Tidewater Goby, Least Bell's Vireo  
Tidewater Goby  
San Diego Fairy Shrimp, California Least Tern  
Least Bell's Vireo  
Arroyo Toad  
Least Bell's Vireo  
Least Bell's Vireo, Arroyo Toad  
Least Bell's Vireo  
Least Bell's Vireo  
Least Bell's Vireo  
Desert Pupfish  
Least Bell's Vireo, Desert Pupfish  
Desert Pupfish  
Least Bell's Vireo  
Western Snowy Plover, Tidewater Goby, California Least Tern  
Tidewater Goby, Least Bell's Vireo  
Desert Pupfish  
Least Bell's Vireo  
Tidewater Goby, Least Bell's Vireo  
Least Bell's Vireo  
Least Bell's Vireo  
Least Bell's Vireo

## Section List

### San Diego County

#### Sections

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11S04W: S31  
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11S05W: S5  
11S05W: S8-9  
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#### Species

Least Bell's Vireo, California Least Tern  
Least Bell's Vireo  
Western Snowy Plover, Tidewater Goby  
Western Snowy Plover, Tidewater Goby, California Least Tern  
Western Snowy Plover, Tidewater Goby, Least Bell's Vireo  
Least Bell's Vireo  
Tidewater Goby, Least Bell's Vireo  
Least Bell's Vireo  
Tidewater Goby  
Western Snowy Plover, California Least Tern  
Least Bell's Vireo  
Tidewater Goby, Least Bell's Vireo  
Least Bell's Vireo  
Western Snowy Plover, Tidewater Goby  
Least Bell's Vireo  
Arroyo Toad  
Least Bell's Vireo  
Least Bell's Vireo  
Least Bell's Vireo  
Least Bell's Vireo  
Least Bell's Vireo  
Tidewater Goby  
Western Snowy Plover, Tidewater Goby  
Western Snowy Plover, Tidewater Goby, California Least Tern  
Western Snowy Plover, Tidewater Goby  
Western Snowy Plover, California Least Tern  
Least Bell's Vireo  
Unarmored Threespine Stickleback  
Western Snowy Plover, Tidewater Goby  
Least Bell's Vireo  
Least Bell's Vireo  
Western Snowy Plover  
Western Snowy Plover, California Least Tern  
Western Snowy Plover  
California Least Tern  
Western Snowy Plover  
Western Snowy Plover, California Least Tern  
Western Snowy Plover  
Western Snowy Plover, California Least Tern  
California Least Tern

## Section List

### San Diego County

Sections	Species
14S05E: S1	Least Bell's Vireo
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15S01W: S13, 28-30	Least Bell's Vireo
15S02W: S4	San Diego Fairy Shrimp
15S02W: S5	San Diego Fairy Shrimp, Riverside Fairy Shrimp
15S02W: S20-21	San Diego Fairy Shrimp
15S02W: S24-25	Least Bell's Vireo
15S02W: S28	San Diego Fairy Shrimp
15S02W: S34-35	Least Bell's Vireo
15S03E: S13-14, 23-26	Least Bell's Vireo
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15S04E: S18-20	Least Bell's Vireo
15S04E: S24-26	Arroyo Toad
15S04E: S30	Least Bell's Vireo
15S04E: S36	Arroyo Toad
15S05E: S18, 31	Arroyo Toad
16S01E: S29, 31	Least Bell's Vireo
16S01W: S8-9, 15-17, 20-22, 26, 35-36	Least Bell's Vireo
16S02E: S11	Least Bell's Vireo, Arroyo Toad
16S02E: S18-19	Least Bell's Vireo
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16S03E: S23, 26, 34	Least Bell's Vireo
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16S03W: S12-13, 15	Least Bell's Vireo
16S03W: S17-19	California Least Tern
16S03W: S24	Least Bell's Vireo
16S03W: S27-28	Western Snowy Plover, California Least Tern
16S03W: S29	Western Snowy Plover
16S03W: S30	California Least Tern
16S03W: S32-34	Western Snowy Plover, California Least Tern
16S03W: S35	California Least Tern
16S04W: S25	California Least Tern
16S05E: S17, 20	Least Bell's Vireo
17S01E: S33-34	Least Bell's Vireo
17S01W: S1-3, 9-11	Least Bell's Vireo

## Section List

### San Diego County

#### Sections

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#### Species

Western Snowy Plover, California Least Tern  
Least Bell's Vireo  
Least Bell's Vireo  
California Least Tern  
Western Snowy Plover, California Least Tern  
Western Snowy Plover  
Western Snowy Plover, California Least Tern  
California Least Tern  
Western Snowy Plover, California Least Tern  
Western Snowy Plover  
California Least Tern  
Least Bell's Vireo  
Arroyo Toad  
Least Bell's Vireo  
Least Bell's Vireo  
San Diego Fairy Shrimp, Riverside Fairy Shrimp  
San Diego Fairy Shrimp  
San Diego Fairy Shrimp, Riverside Fairy Shrimp  
Western Snowy Plover, California Least Tern  
California Least Tern  
Western Snowy Plover, California Least Tern  
Western Snowy Plover  
Western Snowy Plover, California Least Tern  
Western Snowy Plover  
Western Snowy Plover, California Least Tern  
Least Bell's Vireo  
California Least Tern  
Western Snowy Plover, California Least Tern  
Least Bell's Vireo  
Least Bell's Vireo